



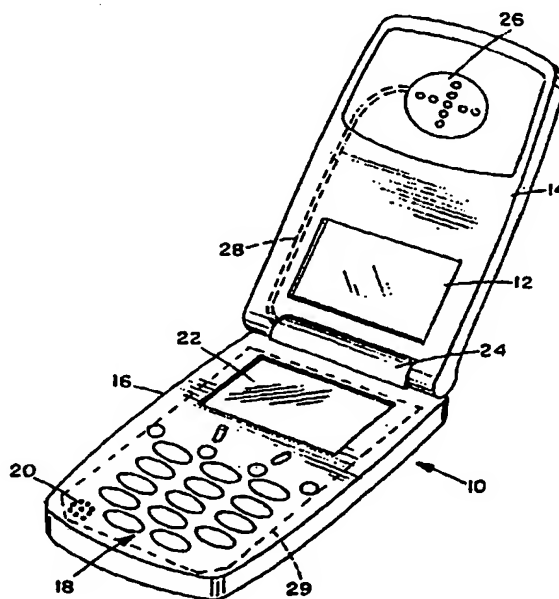
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>H04M 1/02</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/21343</b> <b>(43) International Publication Date:</b> 29 April 1999 (29.04.99)
<b>(21) International Application Number:</b> PCT/US98/22066 <b>(22) International Filing Date:</b> 19 October 1998 (19.10.98) <b>(30) Priority Data:</b> 08/953,818      20 October 1997 (20.10.97)      US <b>(71) Applicant:</b> QUALCOMM INCORPORATED [US/US]; 6455 Lusk Boulevard, San Diego, CA 92121 (US). <b>(72) Inventors:</b> AZARTASH, Mahmoud; 2038 Sequoia Street, San Marcos, CA 92069 (US). McCAUGHAN, Carolyn; 13244 Carolee Avenue, San Diego, CA 92129 (US). SPENCER, Reginald, N.; Suite 2708, 28 Allegheny Avenue, Baltimore, MD 21204-1375 (US). HUBBARD, William, A.; 33 Alderman Court, Timonium, MD 21093 (US). <b>(74) Agents:</b> MILLER, Russell, B. et al.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** PORTABLE TELEPHONE WITH SEE-THROUGH FLIP ELEMENT

**(57) Abstract**

A telephone or flip phone (10) has a base member (16) and a cover member (14) hinged (24) to one end of the base member for movement between a closed position covering at least a major portion of the base member, and an open position rotated away from the base member for receiving and making calls. The base member has a display (22) for displaying information, and the cover member has a transparent or clear window (12) which extends at least over the display when the cover member is in the closed position, so that the user can view the display (22) at all times, even when the cover (14) is in the closed position.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

## PORTABLE TELEPHONE WITH SEE-THROUGH FLIP ELEMENT

### BACKGROUND OF THE INVENTION

5

The present invention relates generally to portable telephones of the flip phone type having a base with a keypad for entering numbers and commands, and a cover hinged to one end of the base for covering the keypad when not in use. This type of phone also often has a display for features such as caller ID, messages, paging, and so on, and is a design often used in wireless or portable cellular phones.

The cover of flip-style phones with a display is normally of opaque material, and the cover extends over the display when closed. Thus, it is not possible to view incoming messages and pages without opening the cover. The user therefore cannot readily use such features as caller ID, messaging, paging and the like with such phones.

### SUMMARY OF THE INVENTION

It is an object of the present invention to provide a new and improved flip phone in which the display or screen can be readily viewed at all times.

According to the present invention, a flip phone is provided which comprises a base having a display, and a cover having one end hinged to a corresponding end of the base, the cover being movable between a closed position in which it covers at least a major portion of the base, and an open position in which the cover is rotated outwardly away from the base to uncover the display, and the cover is transparent over at least a predetermined area of the cover which extends over the display when the cover is closed, so that the user can view the display when the cover is in the closed position.

The cover may have a transparent window covering the display, or the entire cover may be of transparent material. Additionally, the cover may include an opening in the form of a window above the display so that the user may see and even touch the display directly through the opening in the cover. This embodiment would be well suited to use in a portable telephone or PDA which has a touch-sensitive screen. In a preferred embodiment of the invention, the transparent or clear window is a

magnifying lens, so that the display is magnified and the user can view the message or displayed phone number even more easily.

The phone includes the conventional circuitry, user ear piece and microphone. The ear piece may be mounted in the lid or cover, and the  
5 microphone in the base, or alternatively the microphone may be in the cover with the earphone in the base. In either case, leads connected between the ear piece or the microphone, respectively, and the phone circuitry are routed through the lid or cover to one side of the transparent window.

With this invention, the user can see messages readily without  
10 having to open the phone. Also, caller ID is effective since the caller can be identified before the user answers the phone. In previous arrangements where the display was concealed by the lid or cover, caller ID was ineffective because the user could not see the ID until opening the cover, thereby answering the phone. With this arrangement, caller ID can be viewed  
15 readily before deciding whether to answer the phone. The user can also readily read text or numerical pages on the display at any time without opening the flip cover.

## BRIEF DESCRIPTION OF THE DRAWINGS

20

The features, objects, and advantages of the present invention will become more apparent from the detailed description set forth below when taken in conjunction with the drawings in which like reference characters identify correspondingly throughout and wherein:

25 FIG. 1 is a perspective view of a flip phone according to a first embodiment of the invention incorporating the viewing window;

FIG. 2 is a perspective view of the telephone with the flip cover open;

FIG. 3 is a side view, partially cut away to show the arrangement of the viewing window and display panel;

30 FIG. 4 is a perspective view of an alternative configuration of the flip phone;

FIG. 5 shows the telephone of FIG. 4, with the flip cover open; and

FIG. 6 is a side view, partially cut away to show the viewing window and display panel alignment.

35

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1-3 of the drawings illustrate a flip phone or telephone 10 according to a first embodiment of the invention in which a transparent viewing window 12 is provided in the flip cover or lid 14. The phone 10 has a base 16 having a keypad 18, microphone 20 and display 22. The display is used for messages, paging, caller ID and the like.

The flip cover 14 is pivotally secured to one end of the base 16 via hinge 24 so that it can be flipped between the closed position of FIG. 1, in which it covers at least a major portion of the base 16, and the open position of FIG. 2. The lid 14 has an ear piece 26 adjacent its free end. The viewing window 12 is positioned to extend over the display 22 when the lid or cover 14 is in the closed position, as best illustrated in FIG. 3. The flip phone is arranged with much of the necessary electronics in the base 16 of the phone, and the ear piece 26 is connected to the phone circuitry in the base via leads 28 which are routed to one side of the viewing window 12, as illustrated in FIG. 2, and to the base through hinge 24. The phone electronics will typically be provided on a printed wiring board 29 which is located beneath keypad 18, as illustrated schematically in FIG. 2. The cover 14 can then be formed as a relatively thin plastic piece that houses only the ear piece, and perhaps a vibrator.

The viewing window 12 may be of any suitable clear material, such as clear plastic, and is preferably formed as a magnifying lens, as best illustrated in FIG. 3, so that any information on the display 22 will be visible to the user without having to open the flip cover 14, and will be magnified for easy viewing. Any desired magnification may be used, although the magnification is preferably of the order of 1.5 to 2.5. The remainder of the flip cover 14, apart from the viewing window 12, may be of opaque plastic material or the like. Alternatively, the entire cover 14 may be of transparent or clear material, such as clear plastic. In the latter case, the portion of the cover overlying the display 22 may be formed as a magnifying lens, if desired.

In an alternate embodiment, the viewing window 12 is not made of plastic or any other material, but rather is merely an opening in the flip cover 14 so that the user may see and touch the display 22 directly. This alternate embodiment is particularly useful when used with a touch sensitive display. However, this embodiment may also be advantageous because of its lower cost than the other plastic window embodiments.

When the flip cover 14 is opened, the user can operate the phone 10 either to make calls or receive incoming calls, with the ear piece 26 in the cover against the ear and the microphone 20 in the base 16 adjacent the mouth. The ear piece 26 alone may be mounted in the cover 14, or  
5 alternatively the ringer or speaker and vibrator (not illustrated) could also be mounted in the cover 14, with the remainder of the phone circuitry (not illustrated) mounted in the base 16.

FIGS. 4-6 illustrate an alternative phone configuration 30 in which a base 31 has a keypad 32 and a display 34 as in the previous embodiment, and  
10 a cover 36 is hinged to one end of the base 31 via hinge 38. However, unlike the previous embodiment, in this embodiment the microphone 40 is mounted adjacent the free end of the cover, while the ear piece 42 is mounted adjacent the free end of the base 31. As in the previous  
15 embodiment, the phone is of a clam-shell type and the cover or lid 36 covers both the keypad 32 and the display 34 when closed. However, in this embodiment, the keypad 32 and display 34 are in a recessed region and the cover 36 fits into the recessed region when closed, leaving the ear piece 42 exposed, as illustrated in FIG. 5.

As in the previous embodiment, the cover 36 is provided with a  
20 transparent window 44 which is located over the display 34 when the cover 36 is closed, so that the user can read any information on the display 34 without having to flip open the cover 36. The remainder of the cover 36 may be of opaque material, or the entire cover 36 may be transparent. The window 44 is preferably formed as a magnifying lens, as in the previous  
25 embodiment, so that information on the display is magnified and can be read more easily by the user. The material may be transparent plastic or the like. However, as in the previous embodiment, the window 44 may be of non-magnifying plastic, or may merely be an opening in the flip cover 36.

The cover 36 is relatively thin, and the circuitry (not illustrated) for  
30 the phone is preferably all housed in the base 31. Connecting leads 46 from the microphone 40 to the circuitry in the base via hinge 38 are routed to one side of the viewing window 44, as illustrated in FIG. 5. When the cover 36 is closed as in FIGS. 4 and 6, the user can still see any information appearing in the display 34 via window 44, such as caller ID, messages, and paging  
35 information. Therefore, the cover 36 does not have to be flipped open to obtain such information, as was necessary in the past. When a call is to be made or answered, the user simply flips open the cover 36 as in FIG. 5, placing the ear piece 42 against the ear with the microphone 40 in the cover adjacent the mouth.

In existing flip phones, the display is concealed unless the cover is opened. Thus, in reality, features such as caller ID cannot be used, since the user can only see the caller ID on opening the cover, which simultaneously answers the call. With this invention, the flip phone user can see the caller ID before answering the call, and can elect not to answer if desired. Additionally, with conventional flip phones, the user cannot see any messages or pages until and unless the flip cover is opened, so that there may be some delay until such messages or pages are answered. With this invention, any messages or pages are immediately visible without opening the cover.

The previous description of the preferred embodiments is provided to enable any person skilled in the art to make or use the present invention. The various modifications to these embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without the use of the inventive faculty. Thus, the present invention is not intended to be limited to the embodiments shown herein but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

**WE CLAIM:**

## CLAIMS

1. A telephone, comprising:
  - 2 a base member having a display for displaying information, the base member having opposite first and second ends;
  - 4 a cover member having opposite first and second ends, and a hinge member pivotally connecting the first end of the cover to the first end of the
  - 6 base, whereby the cover member is movable between a closed position in which it covers at least a major portion of the base, and an open position in
  - 8 which the cover is rotated outwardly away from the base to uncover the base; and
  - 10 at least a window portion of the cover member being transparent, the window portion extending over at least the display when the cover member
  - 12 is in the closed position, whereby the user can view the display when the cover is in the closed position.
2. The telephone as claimed in claim 1, wherein the window
- 2 portion is a magnifying lens.
3. The telephone as claimed in claim 1, wherein the entire cover
- 2 member is formed of transparent material.
4. The telephone as claimed in claim 1, wherein the window
- 2 portion only is transparent and the remainder of the cover member outside the window portion is of translucent material.
5. The telephone as claimed in claim 1, wherein the window
- 2 portion is of clear plastic material.
6. The telephone as claimed in claim 1, including an ear piece
- 2 mounted adjacent the second end of the cover member, a microphone mounted adjacent the second end of the base member, phone control
- 4 circuitry mounted in the base member, and connecting leads extending from the ear piece to the phone control circuitry, the connecting leads being
- 6 routed to one side of said window portion.
7. The telephone as claimed in claim 6, wherein the cover
- 2 member completely covers the base member when in the closed position.



8. The telephone as claimed in claim 1, including a microphone  
2 mounted adjacent the second end of the cover member, an ear piece  
mounted adjacent the second end of the base member, phone control  
4 circuitry mounted in the base member, and connecting leads extending  
through the cover member from the microphone to the phone control  
6 circuitry, the connecting leads being routed to one side of said window  
portion.

9. The telephone as claimed in claim 1 wherein said window  
2 portion is an opening in said cover member.

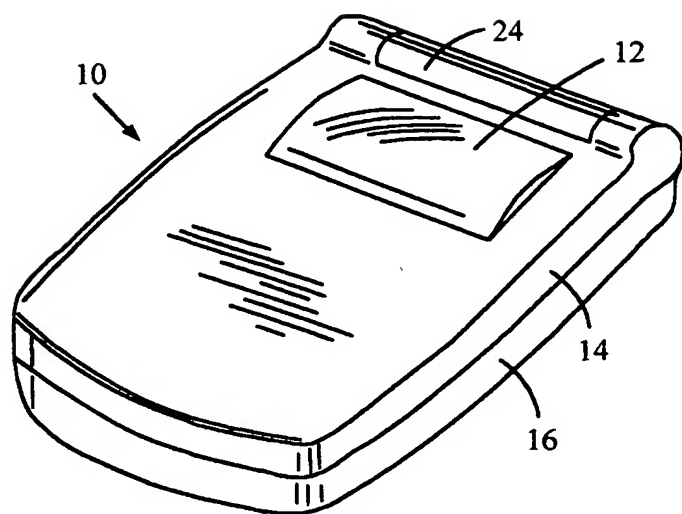


FIG. 1

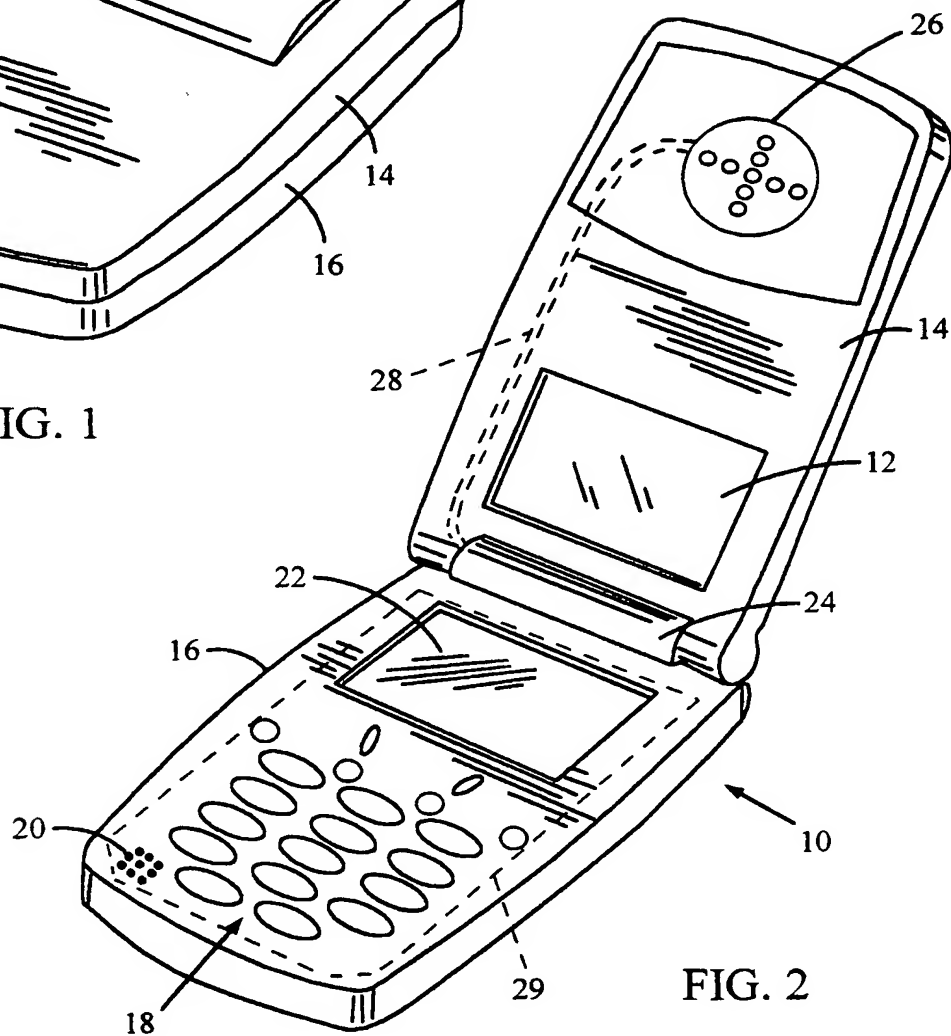


FIG. 2

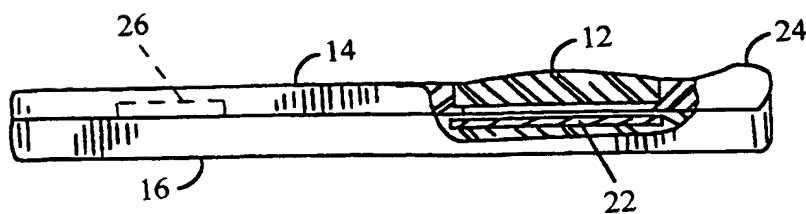
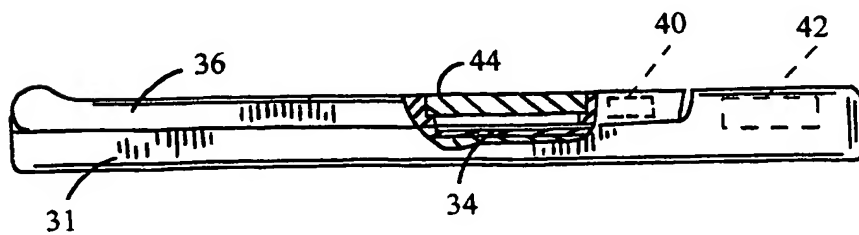
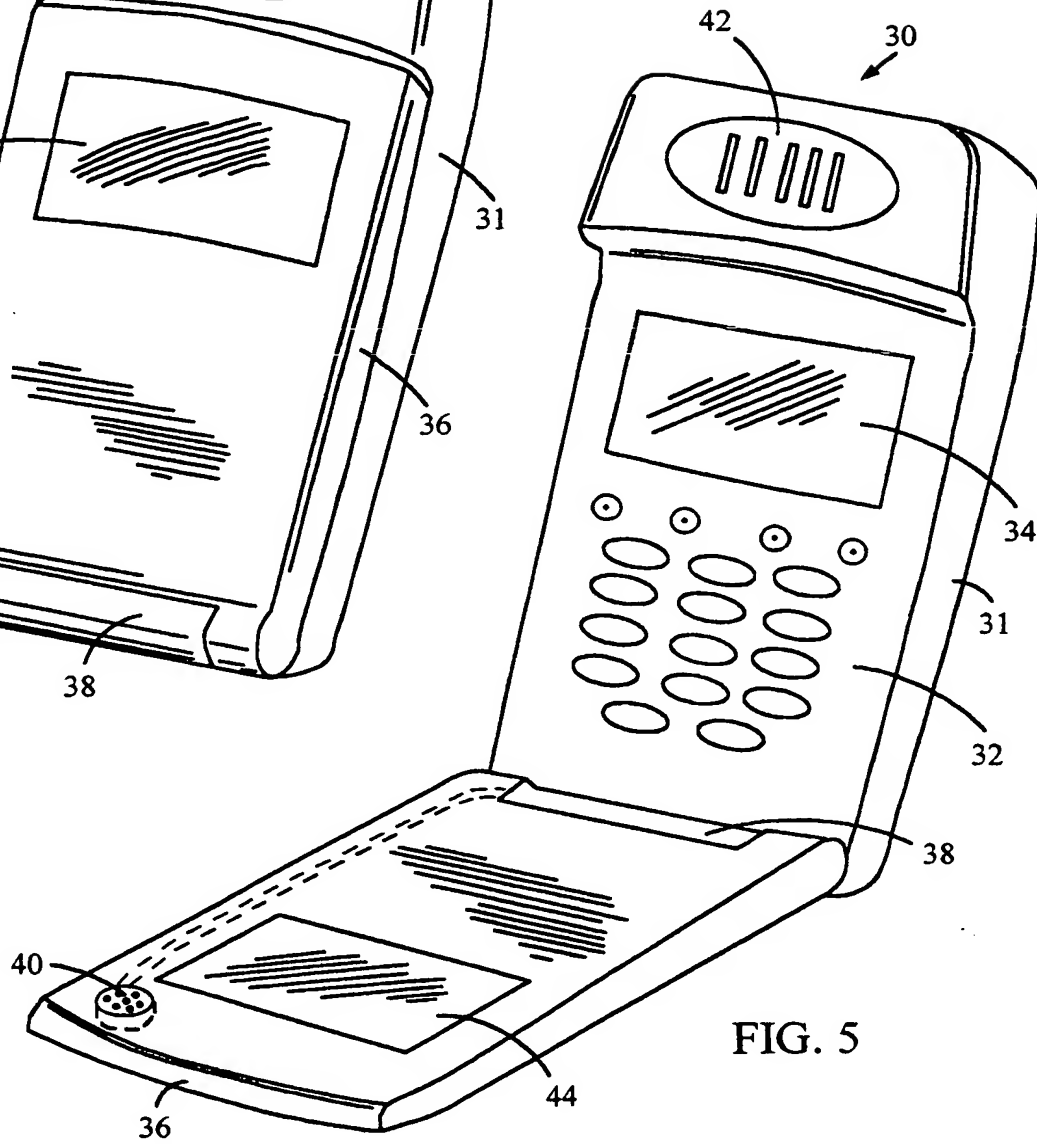
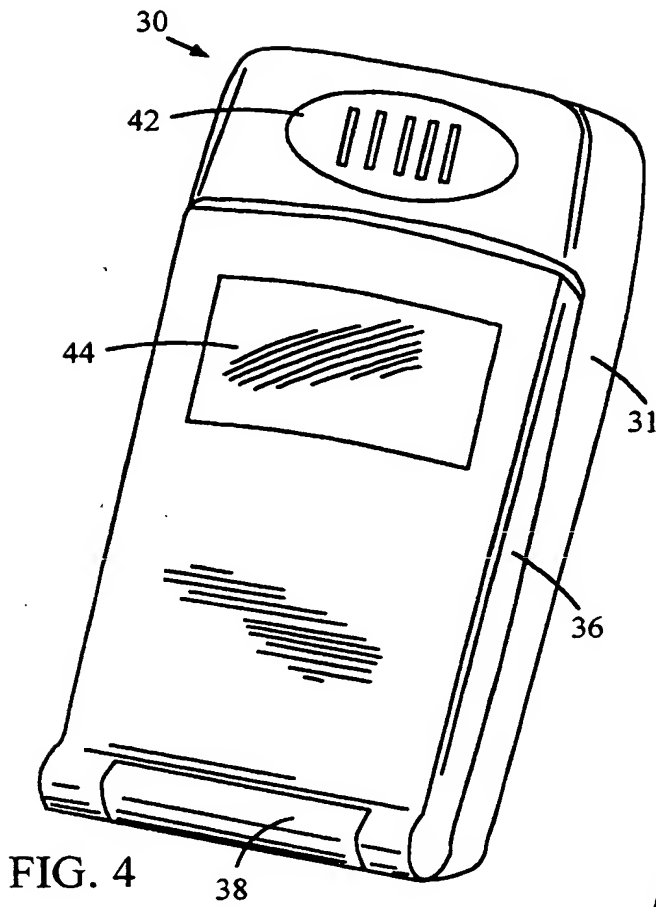


FIG. 3



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/22066

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 H04M1/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 017, no. 069 (E-1318), 10 February 1993 & JP 04 273639 A (TOSHIBA CORP), 29 September 1992 see abstract	1,4,7,8
X	PATENT ABSTRACTS OF JAPAN vol. 017, no. 317 (E-1382), 16 June 1993 & JP 05 030166 A (MATSUSHITA ELECTRIC IND CO LTD), 5 February 1993 see abstract	1,4,8
X	EP 0 602 828 A (AT & T CORP) 22 June 1994 see column 2, line 50 - line 56 see column 3, line 55 - column 4, line 37 see figure 1	1,3,6,7
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

29 January 1999

Date of mailing of the international search report

08/02/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Fragua, M

# INTERNATIONAL SEARCH REPORT

Ir. Application No  
PCT/US 98/22066

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 98 23077 A (ERICSSON GE MOBILE INC) 28 May 1998 see page 4, line 19 - page 6, line 24 see figures 1-4 ---	1,3-5, 7-9
P,X	GB 2 319 878 A (MOTOROLA INC) 3 June 1998 see page 2, line 29 - page 3, line 12 see figures 2,1 -----	1,2,4,9

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/22066

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0602828	A	22-06-1994	CA	2108535 A	15-06-1994
			JP	2798598 B	17-09-1998
			JP	6232950 A	19-08-1994
WO 9823077	A	28-05-1998	AU	5355898 A	10-06-1998
GB 2319878	A	03-06-1998	DE	19751139 A	04-06-1998
			FR	2756404 A	29-05-1998
			JP	10187106 A	14-07-1998